

REMARKS

Claims 1-24 are pending. Claims 1-24 are rejected. Claims 1, 9, 17, and 21 are amended. Reconsideration and allowance is requested based on the foregoing amendments and the following remarks.

Claim Rejections under 35 U.S.C. §103(a)

Claims 1-3, 6, 9-11, 17, 18, 21, and 22 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Merchant et al. U.S. Pat. No. 6,163,838 ("Merchant") in view of Sager et al. U.S. Pat. No. 6,256,745 ("Sager") and in further view of Hammarlund et al. U.S. Pat. No. 6,912,648 ("Hammarlund".) Claims 4, 5, 7, 8, 12-16, 19, 20, 23, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Merchant, Sager, and Hammarlund as applied to claims 1-3, 9-11, 17, 18, 21, and 22 above, and further in view of Grochowski U.S. Patent No. 6,035,389 ("Grochowski"). Applicants respectfully traverse the rejections and assert the amended claims are patentably distinct over the prior art.

Consider a portion of claim 9, which recites in part:

a re-scheduler device coupled to an instruction queue to receive an instruction, before the instruction being first sent to the scheduler

The prior art does not disclose the bolded elements. In Merchant element 72 of FIG. 3 is alleged by the Office to be the re-scheduler of claim 9 (Office Action, p. 2), but in Merchant element 72 of FIG. 3 is part of a replay system, and the instructions that are in the alleged instruction queue (elements 80, 81, 82, 83 of FIG. 3 of Merchant) were already scheduled by the scheduler (element 30 of Merchant.) Further, note that in Merchant element 72 is connected to the scheduler element 30 by only a stop scheduler line (element 75), and not by "a scheduler coupled to said re-scheduler output for receiving instructions" (claim 9.) Further, Applicants note that claim 9 has a "re-scheduler" and a "replay system" whereas Merchant only has a replay system.

Additionally, Hammarlund fails to remedy these deficiencies. Hammarlund is a method for replay in a processor and the quoted portions of Hammarlund are generally directed towards analyzing errors in executing an instruction to determine a new time to execute the instruction. Hammarlund, c. 13, l. 15-41, c. 14, l. 17-41. Additionally, Sager discloses scheduling an instruction based on the scoreboard and uses a latency vector that schedules the instruction to execute. Finally, Grocowski discloses scheduling the instructions and not delaying sending instructions to a scheduler. Grocowski, c. 3, l. 25-55, c. 5, l. 8-32.

Consider a second portion of claim 9, which recites in part:

a delay unit coupled to said re-scheduler device to store wait history for said instruction; and
a delay queue coupled to the output of said re-scheduler device to hold said instruction for a fixed number of clock cycles, **the fixed number of cycles independent of the current availability of input data to the instruction**

The prior art does not disclose the bolded portion. As discussed above, both Merchant and Hammarlund disclose systems for scheduling in a replay system. As discussed above, both Sagar and Grocowski disclose systems for *scheduling* where the instruction has been actually scheduled. The prior art simply does not disclose delaying sending an instruction to the scheduler (before the instruction being first sent to the scheduler), where the delay is independent of the current availability of input data to the instruction.

Applicants note that embodiments of the present invention have the advantage of potentially lessening the use of the costly on-die resources for the scheduler. See Specification, ¶ 19.

Summary

Therefore, Merchant, Sager, Hammarlund, and Grocowski do not disclose either alone or in any combination the elements of claim 9. As claims 1, 17, and 21 were treated together with claim 9 in the Office Action, the rejections of claims 1, 17, and 21 are traversed for at least the same reasons as for claim 9. Further, since claims 2-7 depend from claim 1, the rejections of claims 2-7 are traversed for at least the same reasons as for claim 1; and since and claims 10-16 depend from claim 9, the rejections of claims 10-16 are traversed for at least the same reasons as for claim 9; and since claims 18-20 depend from claim 17, the rejections of claims 18-20 are traversed for at least the same reasons as for claim 17; and since claims 22-24 depend from claim 21, the rejections of claims 22-24 are traversed for at least the same reasons as for claim 21.

CONCLUSION

All outstanding rejections have been overcome. It is respectfully submitted that, in view of the foregoing remarks, the Application is in condition for allowance. Issuance of a Notice of Allowance is earnestly solicited.

The Examiner is invited to call the undersigned at (202) 220-4228 to discuss any information concerning this application.

The Office is hereby authorized to charge any fees or credit any overpayment to Deposit Account No. 11-0600.

Respectfully submitted,

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